

PROJECT PROPOSAL SUMMARY SHEET

PROJECT NAME: Precision Ag Business Planning Support Project

LEAD PROJECT SPONSOR: Pheasants Forever, Inc.

CONTACT PERSONS:

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STATE: North Dakota

WATERSHED(S): All of LaMoure, Dickey, Ransom and Sargent Counties

PROJECT TYPE: Financial and Technical Assistance for Precision Ag Business Planning

WATERBODY TYPES: Lakes/Reservoirs, Rivers, Streams, Groundwater, Wetlands

NPS CATEGORY: Agricultural

PROJECT LOCATION: Ransom, Sargent, LaMoure and Dickey Counties

SUMMARIZATION OF MAJOR GOALS:

The major goal of this support project is to utilize current precision ag business planning technology, delivered through Profit Zone Manager™ (PZM™) or an equivalent Return On Investment platform, to improve on-farm water quality and downstream benefits while maximizing farm profits and minimizing risks. Profit Zone Manager allows growers to identify and validate revenue negative acres at a sub-field level by analyzing machine data (as planted, as applied and yield data) and personalized crop budgets. In many situations, identified revenue-negative acres are located in low, flood prone, riparian or saline areas and subject to increased rates of inputs, leaching and runoff. One product of PZM is the side-by-side comparison of revenue negative acres and an alternative land use, such as a Best Management Practice (BMP). By examining Return On Investment and profitability the information gained through use of PZM may trigger a management decision towards BMP adoption on revenue negative acres. Additionally, increased conservation stewardship can also occur on the 'green' acres through implementation of BMPs such as cover crops on the entire field which will ultimately lead to improved water quality and soil health. One of the great results of this pilot will be to help North Dakota growers improve on-farm water quality by bringing profitability into the picture to demonstrate that production agriculture and conservation are not only compatible, but mutually beneficial.

PROJECT DESCRIPTION:

Pheasants Forever in coordination with local Soil Conservation Districts and 319 coordinators would provide PZM™ subscriptions and consultation for up to 40 growers in Ransom, Sargent, Dickey and LaMoure Counties. Consultative services include:

- 1) Local one-on-one technical assistance to the grower utilizing PZM;
- 2) Identification and recommendation of BMPs that assist growers with increasing profitability and environmental benefits;
- 3) Encourage voluntary implementation of BMPs;
- 4) Identify potential sources of cost-share for implementation of BMPs;
- 5) Assist with coordinating enrollment into cost-share programs.

FY 2017-2020 319 FUND REQUESTED: \$210,484 FY2017-2020 MATCH: \$140,323
OTHER FEDERAL FUNDS: \$562,500
TOTAL PROJECT COST: \$913,307

1.0 STATEMENT OF NEED

The 2014 Integrated Section 305(b) and 303(d) report indicated that of the 4,539 miles of rivers and streams that were assessed, 25% (1,118 miles) were listed as not supporting aquatic life and an additional 47% (2,147 miles) were listed as fully supporting, but threatened for aquatic life use. The report indicated siltation, sedimentation, habitat loss and degradation were the primary causes for impairment. Organic enrichment was also listed as a contributor to impairments.

Recreational use was assessed on 7,503 miles of rivers and streams and the 2014 report indicated 33% (2,521 miles) were listed as not supporting recreation. While 50% (3,721 miles) were listed as fully supporting but threatened for recreational use. The primary causes of recreation use impairment in these water bodies was identified as pathogens, excessive nutrient loading which resulted in nuisance algal and plant growth.

In order to reduce siltation, sedimentation, organic enrichment and excessive nutrient loading in our rivers and streams changes need to be made on the landscape. In North Dakota voluntary conservation efforts are the preferred option to addressing these water quality concerns. Voluntary efforts may fall into three categories 1) management practices, such as reduced tillage, application rates and cover crops 2) land use practices, such as land retirement or forage production and 3) edge-of-field practices, such as buffers or filter strips.

For example, Iowa's Nutrient Reduction Strategy highlights the use of rye cover crops as a management strategy that can reduce nitrogen and phosphorus losses by 31% and 29% respectively. Iowa's plan also indicated that land use changes, such as conversion to a perennial cover can reduce N and P by 85% and 59%, respectively. The North Dakota Department of Health's Nonpoint Source Pollution Management Plan has identified BMPs to address water quality concerns and there have been numerous success stories across the State, however we continue to have impaired waterbodies throughout North Dakota.

Precision Ag Business Planning offers an innovative approach by utilizing current precision ag technology and allowing operators to evaluate a variety of alternative uses for revenue-negative acres on their operation. The Non-Point Source Pollution Program is a voluntary program and as such faces the same uncontrollable participation constraints as other voluntary conservation programs. The context for developing this new precision ag business

planning strategy is to implement BMPs based on the reality that current baseline voluntary conservation efforts are insufficient to achieve desired targets for water quality, soil health and wildlife populations. The additional backdrop to this project, which relates directly to focusing on economics, is the stark reality of the dramatic drop in commodity prices and farm revenue. According to recent USDA projections, farm sector profitability is forecast to decline for the third straight year. Net farm income is forecast to be down 11.5 percent in 2016. If realized, 2016 net farm income would be the lowest since 2009 (<http://www.ers.usda.gov/topics/farm-economy/farm-sector-income-finances/highlights-from-the-farm-income-forecast.aspx>). By utilizing a producers own data and crop budgets, the use PZM can demonstrate increased farm profits through BMP adoption. Increased adoption of BMPs will improve on-farm water quality and downstream benefits.

This project will focus on the North Dakota counties of Ransom, Sargent, LaMoure and Dickey. The 303(d) listed waterbodies in these counties include, Shortfoot Creek, Crooked Creek, Bristol Gulch, Maple Creek, and Timber Coulee, along with the Wild Rice, Sheyenne, Elm, Maple, Upper Elm, and South Fork Maple Rivers (Appendix A).

2.0 PROJECT DESCRIPTION

Pheasants Forever continually seeks and implements new and innovative ways to work with farmers and ranchers to demonstrate how conservation can improve their operation and quality of life. With the advancement of precision agriculture technology, we believe this information can be harnessed to increase both Return On Investment (ROI) while also providing water quality benefits, improving soil health and creating wildlife habitat. Pheasants Forever believes working collaboratively with private landowners to reach their goals is the best way to accomplish this. The main underpinning of this strategy is the integration of precision agriculture technology with business planning and environmental performance metrics to showcase how conservation can improve profitability. This is a paradigm shift since conservation programs and BMPs have historically been viewed by growers as sacrificing economic opportunities rather than augmenting. The key advancement is the development of technology capable of evaluating opportunities at a sub-field scale rather than the historic view of entire fields and by examining ROI rather than bushels per acre.

With the current reduction in commodity prices, operators are exploring new options for non-profitable acres. Pheasants Forever believes profitable agriculture and conservation of our water, soil and wildlife resources are all possible. Precision Ag Business Planning offers operators the opportunity to deploy Profit Zone Manager™ (PZM) or equivalent ROI based platform on their farm to identify and validate revenue negative acres by analyzing machine data (as planted, as applied, yield data) and personalized crop budgets. During the business performance review and planning steps, alternative land-use options including BMPs will be explored which may result in increased profits on those acres and a greater ROI over the entire field. Profit Zone Manager™ clearly demonstrates to operators the financial impacts of farming the “trouble spots”. Profit Zone Manager™ allows operators to better understand what parts of a field (down to a 3 meter accuracy) make them the most profit and which areas are costing them money to farm.

Goals

The primary goal of the project is to assist cooperating producers in the identification and establishment of sustainable and economical practices on revenue-negative acres to help restore or protect water quality, soil health and wildlife habitat on their operations. A secondary goal will be to assist producers increase profits on productive acres by adopting management practices that can reduce nutrient loss and increase farm profits.

Objectives

Objective 1: Coordinate and deliver the Precision Ag Business Planning project with local partners (SCDs, 319s, NDGFD), provide technical assistance through one-on-one consultation and facilitate BMP adoption.

Task 1 - Employ one field biologist to provide one-on-one technical assistance to PZM subscribers, and complete project tasks. Includes salary/fringe, and travel.

Product – One field biologist (1/2 time)

Cost – \$138,589 for project lifespan

Task 2- Employ one state coordinator to coordinate the project, track project success and assist with completing project tasks. Includes salary/fringe, travel, supplies, postage, equipment, training and telephone.

Product- One state coordinator (1/4 time)

Cost – \$89,319 for project lifespan

Task 3 – Provide one-on-one business planning consultation to producers utilizing Profit Zone Manager or equivalent Return On Investment (ROI) platform in the 4-county project area. Consultations will also provide training to producers allowing them to become more adept with the software capabilities.

Product – 10-15 consultations provided per year

Cost - Included in Task 1

Task 4 – Provide coordination between operators and partners to facilitate enrollment into and/or implementation of newly adopted BMPs.

Product – Coordinate with local USDA, SCD, 319, North Dakota Game and Fish Department or other partner staff to facilitate program enrollment. Possible sources of cost-share include Section 319 watersheds, Environmental Quality Incentives Program through NRCS or the Conservation Reserve Program through FSA, as well as other State and local sources. The North Dakota Game and Fish Department has made additional cost-share available for BMPs (Appendix B) to producers that participate in the Precision Ag Business Planning process. When necessary, subcontracts will be established with SCDs to facilitate the planning and implementation of BMPs with producers.

Cost – Included in Task 1

Objective 2: Provide financial assistance for 40 Profit Zone Manager subscriptions to operators within Ransom, Sargent, LaMoure and Dickey Counties.

Task 5 - Provide Section 319 financial support available through Pheasants Forever's Precision Ag Business Planning support project to producers within the project area.

Product - 40 1-year subscriptions of Profit Zone Manager or equivalent Return On Investment platform.

Cost - \$79,800: 10 /year (\$1995.00/subscription)* 4 years = \$79,800

Objective 3: Share project successes with resource professionals, landowners, and other interested parties.

Task 6 - Provide outreach, communications, tours and trainings for resource professionals, agribusiness, commodity groups, Certified Crop Consultants, landowners and growers to demonstrate the use of PZM and its benefits to farm profitability and water quality.

Product – Host one professional development workshop per year of the project. Host one producer focused workshop per county per year to showcase results of enrolling revenue-negative acres in coordination with local partners and stakeholder groups. Host a booth at relevant agricultural trade shows. (e.g Big Iron, Agri-international, ND Winter Show) to showcase the process of precision ag business planning and water quality benefits. Develop newsletters and articles highlighting project progress.

Cost – \$6,200 for project lifespan

Milestone Table

See Appendix C for time line of project tasks.

3.0 COORDINATION PLAN

Lead Project Sponsor

Pheasants Forever is a 501c (3) non-profit conservation organization that is eligible to receive and manage federal funds. Pheasants Forever will be the lead organization for this project. Responsibilities include overall program and fiscal administration to implement all tasks. Pheasants Forever will be responsible for monitoring the progression of tasks and submitting annual and final project reports to EPA through the North Dakota Department of Health. Pheasants Forever will lead coordination efforts between all interested parties.

Cooperating Organizations

Section 319 Watershed Projects

Watershed project coordinators will assist with the promotion of this opportunity to producers within their watersheds. They will provide Section 319 BMP cost-share assistance to interested producers in their watersheds that have identified revenue-negative acres through the use of Profit Zone Manager. Watershed project coordinators will also work closely with the North Dakota Game and Fish Department to make available additional cost-share assistance to producers that have participated in the precision ag business planning process. They will track applied practices through ongoing watershed monitoring efforts.

North Dakota Game and Fish Department

The North Dakota Game and Fish Department will provide up to \$187,500 in federal cost-share assistance, for selected BMPs, to producers that have participated in the precision ag business planning process. The list of approved BMPs eligible for NDGFD cost-share can be found in (Appendix B). For local SCDs that utilize riparian easements, up to \$375,000 will be used to secure SCD held riparian easements. Additional opportunities and financial support may be available through the NDGFD, if a participant is interested in allowing public access through the Department's Private Land Open To Sportsmen (PLOTS) program.

USDA Natural Resource Conservation Service

The NRCS can provide technical assistance to interested producers to assist them with implementation of best management practices. When available NRCS can assist interested producers in applying for and enrolling in federal farm bill programs, such as EQIP or CSP.

Farm Service Agency

The FSA can assist interested producers with enrollment into the Conservation Reserve Program when and where applicable.

Soil Conservation Districts

SCDs will assist with identification and referral of interested producers. These organizations will be crucial in the promotion of the opportunity as well as sharing the results and success with local producers in their counties

AgSolver

AgSolver is an agriculture data technology company based in Ames, Iowa. They will provide the precision platform and various forms of technical assistance with data upload, processing and remote consultations.

Local Support

The conservation community, ND Department of Health, and Soil Conservation District personnel have all indicated a need for this new approach. Traditional methods of conservation delivery are not adequately addressing our soil, water and wildlife resource concerns. Precision Ag Business Planning brings profitability into the picture demonstrating that production agriculture and conservation are not only compatible but mutually beneficial. It has been stated numerous times that producers know their "trouble spots", but very few realize in dollars and cents how much those "trouble spots" actually cost them in lost profits. Feedback from our pilot project, from producers that have used Profit Zone Manager has all been positive. We will also need the engagement of farmers and ranchers to explore and evaluate this new tool.

Duplicate Efforts

A Precision Ag Business Planning Pilot was launched in Ransom and Sargent Counties in August 2016, participation was limited to two producers in each County. Feedback has been positive and this effort looks to expand upon the success of the pilot project.

4.0 EVALAUTION AND MONITORING PLAN

The benefits of the applied practices will be tracked through ongoing water quality monitoring efforts within the active Section 319 watershed projects assisted by the Precision Ag Business Planning Project. The project partners will also track the location, type and amount of BMP applied within the revenue-negative acres identified through the project. When feasible, the STEPL model will also be used to estimate the edge-of-field nitrogen, phosphorus and sediment load reductions resulting from the applied practices.

5.0 BUDGET

The budget is outlined in two tables. Table 1 outlines funding by year. Table 2 provides a more detailed line-item budget.

Table 1.

Part 1: Funding Sources					
	2017	2018	2019	2020	Total
EPA SECTION 319 FUNDS					
1)FY Funds (FA & TA)	\$50,407	\$51,833	\$53,333	\$54,910	\$210,483
STATE/LOCAL MATCH					
1) Non-Federal (FA & TA)	\$29,615	\$30,566	\$31,565	\$32,617	\$124,363
2) Landowners (FA)	\$3,990	\$3,990	\$3,990	\$3,990	\$15,960
Subtotals	\$33,605	\$34,556	\$35,555	\$36,607	\$140,323
TOTAL BUDGET					
	\$84,012	\$86,389	\$88,888	\$91,517	\$350,806
OTHER FEDERAL FUNDS					
1) NDGFD (P-R BMPs)(FA)	\$281,250	\$281,250	\$0	\$0	\$562,500
TOTAL FEDERAL FUNDS	\$281,250	\$281,250	\$0	\$0	\$562,500
TOTAL PROJECT COST					\$913,306

FA: Financial Assistance

TA: Technical Assistance

NDGFD: North Dakota Game and Fish Department

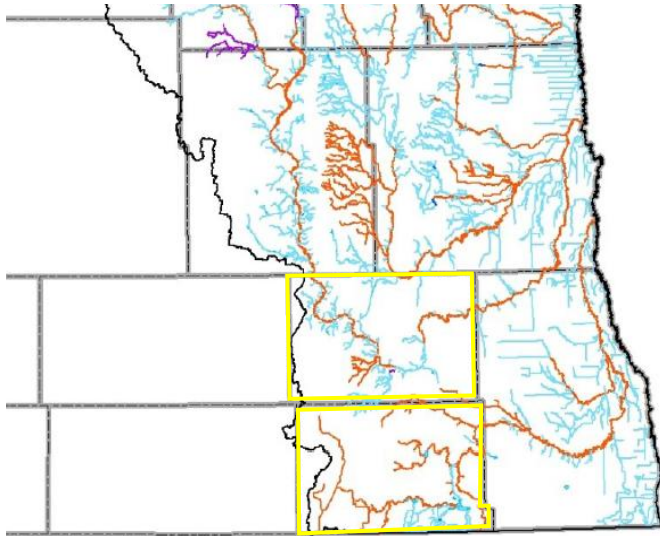
P-R BMPs: 75/25 Cost-share assistance on selected BMPs

Table 2.

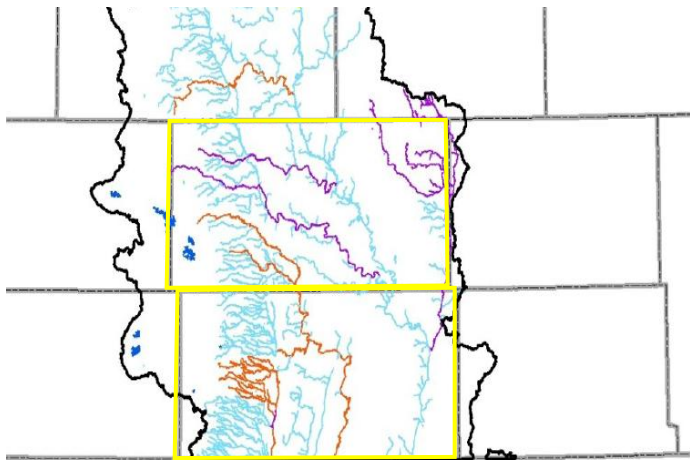
Part 2: Detailed Budget (Section 319/Non-Federal)								
	2017	2018	2019	2020	Total Costs	Cash Match	In-Kind Match	319 Funds
Objective 1: PERSONNEL/SUPPORT/ADMIN								
Salary	\$34,947	\$36,346	\$37,799	\$39,311	\$148,403	\$59,361	\$0	\$89,042
Fringe	\$10,112	\$10,795	\$11,535	\$12,333	\$44,775	\$17,910	\$0	\$26,865
Travel	\$8,250	\$8,250	\$8,250	\$8,250	\$33,000	\$13,200	\$0	\$19,800
Postage	\$100	\$100	\$100	\$100	\$400	\$160	\$0	\$240
Printing/Supplies	\$375	\$375	\$375	\$375	\$1,500	\$0	\$600	\$900
Telephone/Internet	\$615	\$615	\$615	\$615	\$2,460	\$0	\$984	\$1,476
Training	\$750	\$750	\$750	\$750	\$3,000	\$0	\$1,200	\$1,800
Administration	\$7,363	\$7,658	\$7,964	\$8,283	\$31,269	\$0	\$12,507	\$18,761
Subtotals	\$62,512	\$64,889	\$67,388	\$70,017	\$264,807	\$90,631	\$15,291	\$158,884
Objective 2: Financial Assistance								
Precision Ag Business Planning Subscription	\$19,950	\$19,950	\$19,950	\$19,950	\$79,800	\$15,960	\$15,960	\$47,880
Subtotals	\$19,950	\$19,950	\$19,950	\$19,950	\$79,800	\$15,960	\$15,960	\$47,880
Objective 3: Information/Education								
Public meetings/Workshops/Tours	\$500	\$500	\$500	\$500	\$2,000	\$400	\$400	\$1,200
Ag Show Booth Rental	\$750	\$750	\$750	\$750	\$3,000	\$1,200	\$0	\$1,800
Newsletters/News releases/Other Mailings	\$300	\$300	\$300	\$300	\$1,200	\$240	\$240	\$720
Subtotals	\$1,550	\$1,550	\$1,550	\$1,550	\$6,200	\$1,840	\$640	\$3,720
Total for all Objectives/Tasks								
Total 319/Non-federal Budget	\$84,012	\$86,389	\$88,888	\$91,517	\$350,807	\$108,431	\$31,891	\$210,484
Section 319 Funds per year	\$50,407	\$51,833	\$53,333	\$54,910	\$210,484			
Total non-federal match per year	\$29,615	\$30,566	\$31,565	\$32,617	\$124,363			
Producer BMP match per year	\$3,990	\$3,990	\$3,990	\$3,990	\$15,960			
In-Kind Match per year from AgSolver	\$3,990	\$3,990	\$3,990	\$3,990	\$15,960			

Appendix A.

303(d) Listed waters needing TMDLs (Category 5) in the Upper Red River Basin and the James River Basin. The Precision Ag Business Planning project area of Sargent, Ransom, LaMoure and Dickey Counties is highlighted.



Upper Red River Basin including Ransom and Sargent Counties



James River Basin including LaMoure and Dickey Counties

Assessment Category

- Unclassified Non Categorized Lakes
- 1 - All Uses Attaining
- 2 - Some Uses Attaining, All Other Uses Not Assessed
- 4A - TMDL Approved, Uses Still Impaired
- 4C - Use Impairment Caused by a Non-Pollutant
- 5 - Use(s) Impaired, Needing a TMDL
- Basin Boundary
- County Boundaries

Appendix B.

Selected BMPs eligible for 75/25 cost-share assistance through the North Dakota Game and Fish Department available to producers that participate in the Precision Ag Business Planning project.

NRCS CODE	PRACTICE	LIFE SPAN (YEARS)	PLANNING RATE	COST-SHARE PAYMENT
327	Conservation Cover	10	\$165.00/ac	Footnote 1
340	Cover Crop (seed costs only)	1	\$20.00/ac.	Footnote 1
342	Critical Area Planting	10	\$300.00/ac.	Footnote 1
382	Fencing (barbed)	10	\$1.80/ft.	\$1.08/ft.
382	Fencing (woven wire)	10	\$2.00/ft.	\$1.20/ft.
382	Fencing (2 wire electric)	10	\$0.95/ft.	\$0.57/ft.
382	Fencing (single wire electric)	10	\$0.90/ft.	\$0.54/ft.
386	Field Border (seed costs only)	10	\$20.00/ac.	Footnote 1
393	Filter Strip (planting/establishment only)	10	\$125.00/ac	Footnote 1
412	Grassed Waterway	10	\$25.00/lnft.	Footnote 1
472	Access Control/Use Exclusion (Livestock only)	1	\$20.00/acre	\$12.00/acre
512	Pasture & Hayland Planting (Forage & Biomass Planting)	5	\$52.00/ac.	Footnote 1 Footnote 5
516	Pipelines	10	\$3.15/ft.	Footnote 1
528A	Prescribed Grazing	3	\$5.00/ac.	\$3.00/ac.
550	Range Planting	10	\$40.00/ac.	Footnote 1
391	Riparian Forest Buffer	10	\$350.00/ac.	Footnote 1
390	Riparian Herbaceous Cover	10	\$300.00/ac.	Footnote 1
610	Salinity & Sodic Soil Management (establishing vegetative cover only)	10	\$20.00/ac.	Footnote 1
614	Trough and Tank (includes frost-free tanks)	10	Local Rate Per Tank	Footnote 1
601	Vegetative Barrier (establishment only)	10	\$125.00/ac.	Footnote 1
658	Wetland Creation	10	Engineer Estimate	Footnote 1
657	Wetland Restoration	10	Engineer Estimate	Footnote 1
Footnote: Cost-share assistance for these BMP must be based on the actual documented costs and cannot exceed 75% of the actual costs				

Appendix C.

Objective/Task	Output	Qty/Grant Period	Year 1	Year 2	Year 3	Year 4
Objective 1						
Task 1 - Provide one-on-one technical assistance to PZM subscribers, and complete project task.		1				
Task 2 - Project coordination, tracking and reporting.		1				
Task 3 - Provide one-on-one business planning consultation to producers utilizing Profit Zone Manager or equivalent Return On Investment (ROI) platform in the 4-county project area. Consultations will also provide training to producers allowing them to become more adept with the software capabilities.	One-on-one producer education in PZM	200				
	Side-by-side producer directed scenarios	400				
Task 4 - Provide coordination between operators and partners to facilitate enrollment into and/or implementation of BMPs		40				
Objective 2						
Task 5 - Provide Section 319 financial support available through Pheasants Forever's Precision Ag Business Planning support project to producers within the project area.	Producer held Profit Zone Manager subscriptions	40				
Objective 3						
Task 6 - Provide outreach, communications, tours and trainings for resource professionals, agribusiness, commodity groups, Certified Crop Consultants, landowners and growers to demonstrate the use of PZM and its benefits to farm profitability and water quality.	Professional Development Workshops	4				
	Producer Focused Workshops	16				
	Ag Show Booths	4				
	Newsletter Articles	4				